

### REMARKS

The Examiner provides a number of rejections and we list them here in the order in which they are addressed:

- I. Claims 1-12 are rejected under 35 U.S.C. § 112 ¶ 1 for lack of enablement for devices or methods that were not already prosecuted in Claims 1-2 of the U.S. Patent No. 6,057,149 (hereinafter the '149 patent) and Claims 1-3 of the U.S. Patent No. 6,271, 021(hereinafter the '021 patent) to which this application claims priority.
- II. Claims 1-12 are rejected under the judicially created doctrine of obviousness-type double patenting over Claims 1-2 of the '149 patent to which this application claims priority. Additionally, Claims 1-12 are rejected under the judicially created doctrine of obviousness-type double patenting over Claims 1-3 of the '021 patent to which this application claims priority.

#### **I. The Pending Claims Are Enabled And Continue From A Restriction**

The Examiner unnecessarily and improperly invokes a Final First Office Action under MPEP 706.07(b). The Examiner states that Claims 1-12 are rejected under 35 U.S.C. § 112 ¶ 1 "... because the specification ... does not reasonably provide enablement for other device or methods ... [other than what is claimed in the related issued patents]... [and] ... The claims now before the Office are the original claims as found in the parent and grandparent applications." *Office Action*, pg 2. The Applicants disagree. The Examiner seems to indicate that the specific claims of the '149 and '021 patents are the only embodiments capable of enablement by the specification. The specification provides a plethora of unclaimed patentable embodiments. For example, the Applicants draw the attention of the Examiner to new Claims 13-20 (which are clearly supported at page 13 lines 21-24 in the specification<sup>1</sup>).

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<sup>1</sup>"Figure 2 shows a two-part approach to construction. Microchannels (100) are made in the silicon substrate (200) and the structure is bonded to a glass substrate (300). The two-part channel construction technique requires alignment and bonding processes but is amenable to a variety of substrates and channel profiles."

The Examiner is reminded that during the prosecution of the grandparent application (08/529,293; issued as U.S. Patent No. 6,057,149), this same Examiner imposed a restriction requirement. The Applicants elected original claims 1-16 (drawn to a method) and reserved the right to prosecute the non-elected claims 17-20 (drawn to a device). These non-elected device claims were subsequently prosecuted in a divisional application (09/271,963; issued as U.S. Patent No. 6,271,021 B1) by this same Examiner.

The instant application is a straight continuation of the '963 device claims. The Examiner, therefore, is estopped by the previous restriction requirement to assert a lack of patentable distinction between the pending claims and the issued method claims of the '293 application.

Where an application ... is a continuation ... an express election made in a prior application in reply to a restriction requirement **carries over** ... unless otherwise indicated by the applicant. Where there is no indication ... that a change in election is desired, the examiner's first action should include a repetition of the restriction requirement made in the prior application to the extent it is still applicable ..." *MPEP § 819 Office Generally Does Not Permit Shift*. [emphasis added]

Applicants have properly continued the prior restriction between the method and device claims in the previous application. The distinction between a method and device (*i.e.* apparatus) claim is easily determined by their respective preambles. Specifically, the issued claims to the '293 application begin "A **method** for merging microdroplets ..." while the pending claims in the instant application begin "A **device** ...". Therefore, any rejections stating that the pending claims are identical to the post-restriction '293 claims are clearly erroneous.

In the present rejection, the Examiner apparently believes the specification limits the substrate material to silicon as recited in the '293 and '936 issued patent claims<sup>2</sup>. Substrate materials, other than silicon, are clearly contemplated and supported in the Applicants' specification. For example,

In a preferred embodiment, these elements are microfabricated from silicon and glass substrates. *Applicants' Specification, pg 5 ln 17-19.*  
... other substrates, such as glass or quartz, can use photolithographic methods ...  
*Applicants' Specification, pg 12 ln 26-27.*

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<sup>2</sup>Applicants are forced to guess at the basis for the Examiner's § 112 position because the Examiner articulates no specific basis.

These teachings clearly indicate that the Applicants consider silicon, glass and quartz as at least three different substrate materials to construct various embodiments.

Furthermore, other unlisted substrates are also properly within the scope of the Applicants' preferred embodiment as the interpretation of the claims need not be literal: "Claims of a patent application *'are to be construed in the light of the specification and the understanding thereof by those skilled in that art to whom they are addressed'.*" *Application of Salem*, 553 F.2d 676, 683, 193 USPQ 513 (CCPA 1977) (quoting *In re Myers*, 410 F.2d 420, 425 (CCPA 1969) with emphasis added in *Salem*). Clearly, those having skill in the art would understand that other materials compatible with the construction of the preferred embodiment are properly within the scope of the claims.

The specification clearly enables any substrate (listed or not) that is compatible with the construction of the preferred embodiment. The present amendments are intended only to place the application in better form for appeal and to further the Applicants' business interests, better define one embodiment and expedite the prosecution of this application. This amendment is not made, however, to acquiesce to the Examiners' argument. Applicants hereby expressly reserving the right to prosecute these original (or similar) claims.

## **II. Double-Patenting To The '149 & '021 Patents Is Terminally Disclaimed**

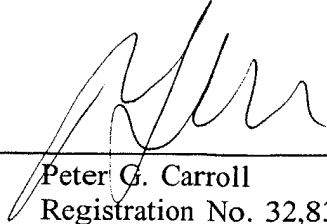
The Examiner rejects Claims 1-12 under the judicially created doctrine of obviousness-type double patenting over the parent and grandparent patents to this application (*i.e.*, U.S. Patent No. 6,271,021 and U.S. Patent No. 6,057,149). The Applicants disagree with the Examiner that the claims of the instant application are, in fact, obvious. Specifically, based on the argument above, the instant application and the '293 application are distinguishable by an imposed restriction requirement. A terminal disclaimer, therefore, to the '149 patent (*i.e.*, containing method claims) is improper. However, in order to expedite the Applicants' commercial business and to further this prosecution a terminal disclaimer based on the '021 patent (*i.e.*, containing device claims) is hereby appended to this response as a separate paper.

The Applicants now respectfully request that the double-patenting rejections be removed and all claims, as they appear in Appendix II of the response, be passed into allowance.

**CONCLUSION**

The Applicants believe that the arguments and claim amendments set forth above traverse the Examiner's rejections and, therefore, request that all grounds for rejection be withdrawn for the reasons set above. Should the Examiner believe that a telephone interview would aid in the prosecution of this application, the Applicants encourage the Examiner to call the undersigned collect at 617.252.3353.

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**APPENDIX I**  
**MARKED-UP VERSION OF REWRITTEN CLAIMS**  
**PURSUANT TO 37 CFR § 1.121 (c)(1)(ii)**

1. (Amended) A device comprising:
  - i) a housing comprised of a substrate, said substrate selected from the group consisting of silicon, glass and quartz;
  - ii) a fluid transport channel in said substrate, said channel connecting to a reaction region; and
  - iii) a series of heating elements arrayed along said fluid transport channel, wherein said series of heating elements are configured so as to provide differential heating.
  
8. (Amended) A system comprising:
  - i) a microdroplet;
  - ii) first and second microdroplet transport channels in a substrate, said channels connecting to a reaction region, said substrate selected from the group consisting of silicon, glass and quartz; and
  - iii) a series of heating elements arrayed along said first and second transport channels, wherein said series of heating elements are configured so as to provide differential heating of said microdroplet by said heating elements.